



Silk-Screening 101

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PARTS:

- [Diazo photo emulsion \(1\)](#)
[made by Speedball](#)
- [Silk screen \(1\)](#)
[8"x10"](#)
- [Piece of glass \(1\)](#)
[8"x10", same size as glass](#)
- [Squeegee \(1\)](#)
- [Task lights \(2\)](#)
- [150-watt bulbs \(2\)](#)
- [Transparency paper \(1\)](#)
[for black and white copier/laser printer](#)
- [Silk-screen inks \(1\)](#)
[Createx and Speedball have worked well for me](#)
- [Hard flat surface \(1\)](#)
[to slip the shirt over while printing. I used an Ikea lid](#)
- [Fan \(1\)](#)
[I used a small Vornado](#)
- [Diazo photo emulsion remover \(1\)](#)
[if you want to clean your screen and start over](#)

SUMMARY

Silk-screening is a great way to personalize your gear. It's a very basic process that has unlimited outcomes. One of the easiest ways to get a design on almost any surface is to use the photo emulsion process. Once you've made the screen, it's ready to print time and time again. Follow along as I walk through the process of transferring my design to a screen, and printing it on a laptop bag.

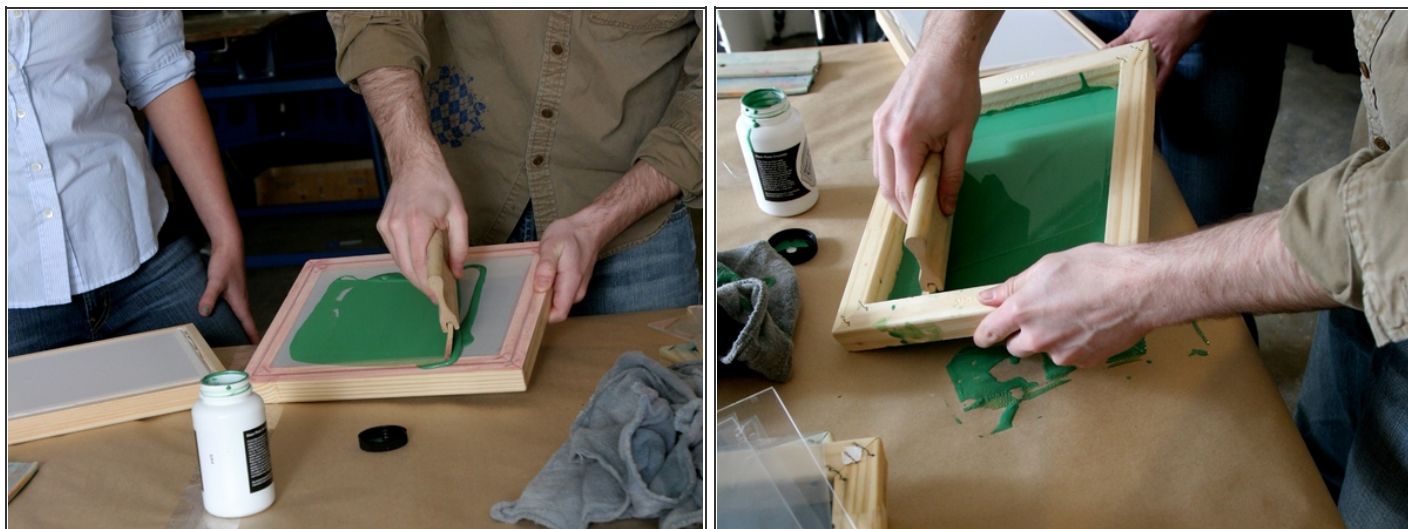
Work up an idea for your design. On your first attempt, try a one-color design, keep it simple, and have some fun with it. Once you get it figured out, make your design digital. Sara and I created ours in Illustrator, but you can also scan a drawing. If you are really hands-on, you can draw straight onto transparency paper using India ink. You need a solid black positive to burn into the screen. I print on transparencies, using a black and white laser printer. This gives me an easy way to accurately, cheaply, and quickly create a positive.



Step 1 — Design.



- Design must be high-contrast. There is either on or off, positive or negative. Grays are acquired by decreasing the size of solid dots. This can be done using halftone dots.
- Take a bold approach. Bolder lines print more easily. Save your delicate designs for when you get a feel for the process.
- Mind your solids. Be cautious of big solid areas. They are harder to print because they require lots of ink and even ink coverage. On fabrics, they also get rubbery, and will eventually crack after lots of washing.
- Have fun with it.

Step 2 — Prep the screen.



- Mix the photo emulsion as per the directions.
- Coat the screen with photo emulsion, working fairly quickly over a sink or surface you can get messy. It's OK to have indoor lights on during this process, but keep out of direct sunlight. The emulsion needs to be applied evenly, so keep flipping the screen over and squeegeeing until the emulsion is even on both sides.
- Note: Any globs will cause uneven exposing and will mess up your end result. The thicker the emulsion is applied, the longer the screen will have to be exposed. 
- The screen needs to be completely dry in order to expose it, and should be dried in a pitch-black room. I dry my screen by resting the wood frame on a couple of shoeboxes in the closet, so that the screen is parallel to and above the floor. This allows the air to flow above and below the screen to help it dry faster. Make sure that only the frame touches the boxes, so as not to mess up the nicely applied emulsion. You can place a fan (I use Vornado because they are compact) next to the screen. Drying it this way takes 30 minutes to an hour, depending on humidity.
- Note: The tighter the weave of the silk, the better resolution you will get. Think of it like dpi (dpi = dots per inch). If your design has lots of detail and you make it 72dpi in Photoshop, of course you'll lose detail and it'll look grainy. If you go to 150dpi, it will look twice as good. If your silk is cheap, chances are it's less than 72dpi. 
- To gain resolution, you will have to buy more expensive silk, and in most cases, that means stretching your own screen. I go the quick and dirty route and use store-bought pre-stretched screens, which cost around \$10 each for an 8x10. In using these, though, I know that any wispy details in my design may be compromised.


Step 3 — Expose the screen.



- Now that it is dry, place the screen on your workspace with the bottom facing down. Put your transparency on the screen in the center and as squarely as you can, then place a piece of glass on top. This holds your transparency down so that it makes direct and even contact with the screen. If it doesn't make direct contact, then your design will appear fuzzy around the edges.
- The light source needs to be placed about 12 inches from the screen to get good results, and it needs to shine evenly across your design. I use two \$10 task lights. These are great because they allow me to easily adjust my light source, and by having two, one on either side of the screen, we can make sure the entire design gets an even, direct supply of light.
- Follow the directions that came with the emulsion for exposing your screen. It varies with the bulb and screen size.
- I'll burn our screen for about 30 minutes. You can tell when the screen is done by looking: the exposed areas turn dark green when they are baked solid by the light.
- Note: For a super-dense positive, make two




them. Line them up and attach them together with double-sided tape.

- Note: You should lay down your design onto the screen  just as you want it to print. If you have type in your design, it should be right reading.

Step 4 — Wash and dry the screen.



- Now that the screen is exposed, wash it off in the sink with hot water. It takes some force to wash the screen effectively. I've attached a special nozzle to my faucet that creates higher pressure.
- Note: I got a nozzle at Bed Bath & Beyond for \$5. Just  screw it on and it'll toggle between high and low. Works great for dishes too; I leave it on all the time.
- Along with spraying, you can gently rub the screen with your fingers. Don't use your fingernails. If you force the emulsion off, you run the risk of tearing off the hardened emulsion, putting you back to step 2.
- You want only the unexposed area to wash off. Under hot water, the emulsion will become slightly gummy. Drying the screen isn't such a big deal this time around, now that it isn't sensitive to light. Prop it up against the fan, or place it where it can get some air. Silk dries quickly.



Step 5 — Print it.



- Note: Silk-screening inks are acrylic. They dry quickly, and are water-soluble and transparent. Due to the transparent nature of the ink, it will interact with the color of the object you are printing on (example: blue ink on yellow shirt will turn slightly greener; blue ink on a black shirt will be barely legible). White, black, and a few metallics are the only completely opaque ink colors. White also comes in extra opaque, which I recommend. If you want to print on a dark material, mixing some opaque white into the color will help it stand out.
- Now that the screen is exposed, washed, and dried, print it and see how it works. Try it out on paper first.
- Lay the screen down flat, making sure that your surface is even and flat. With a spoon, put a glob of paint on the screen and spread it the width of your design. Don't get any on the design itself, just the area above it.
- Now the fun part. Hold the screen down firmly with one hand (or have a buddy help hold it). Use a squeegee to pull the ink down to the bottom of the screen. Apply a small amount of pressure to the squeegee as you pull the ink. You will be able to see the paint evenly



distributed across the screen.

- Lift the screen and look at your beautiful print! Be very careful when you lift off the screen. Try to peel it slowly and directly up, so you don't smudge the fresh ink. It may want to stick to the paper.
- It's as easy as that! Lay the screen down on another piece of paper and do a few more prints for fun.
- Note: You should only have  to spread the paint downward once, but if you don't think it's looking even, give it another pass. With practice, you'll get a feel for it.
- Note: When you pull down,  you should feel it evenly sliding over the screen. If it's grabbing in areas, then there isn't enough ink in that spot. This is one of the telltale signs that your print needs another pull of ink. If the first pull feels even, it may not need a second pull.

Step 6 — Print again.



- Now that you have some practice and a feel for things, let's print the laptop bag. Start with a clean screen.
- Since the bag is soft, we need to put something stiff inside the bag to make the printing surface a little harder. In this instance, I used my old cutting mat.
- Put some masking tape down on the bag as a guide to help line up your screen. The emulsion is just slightly transparent, and you can see the tape through it. Once it is into position, hold it down, glop some paint, and make a nice swish of the squeegee. Lift off the screen and take a look. Beautiful!
- Note: Do a few test runs so you can practice getting good ink coverage and squeegee pressure. It's good practice to test your screen on some scraps of material that are similar to what you want to put your design on.



Step 7 — Clean up.



- Place your finished product somewhere to dry (it will take 15 to 30 minutes).
- Immediately wash your screen — the ink dries fast and can ruin your screen.
- You can make about 100-200 prints with your screen. When doing a long run, you may have to periodically wash out your screen between prints to keep the paint from clogging your design.

Step 8 — Make it washable.



- If you are printing on a shirt, you need to do another step to make it permanent. Here are two options: iron the shirt on a high, dry setting, placing wax paper between the shirt and the iron or add a few drops of an additive like Versatex Fixer to the paint before you apply it to the shirt. You can mix it right into the ink container.
- And once you get the hang of things, you can have a screen ready for printing in an afternoon. I love the immediacy of simple replication that is inherent in silk-screening. Who doesn't love a hand-printed bag, card, or t-shirt? Now go do it!

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